REMARKS

By the present amendment, independent claims 1 and 3 have been amended to obviate the examiner's objections thereto and/or to further clarify the concepts of the present invention. In addition, claims 8-11 including independent claims 8 and 10 have been added. Claims 5-7 have been canceled.

The amendments to claim 1 and the subject matter of newly added claim 8 are supported by the disclosure at line 27, page 8 to line 21, page 9 of the subject specification. The amendments to independent claim 3 and the subject matter of newly added independent claim 10 are based on the disclosure at line 24, page 14 to line 20, page 15 of the subject specification. Entry of these amendments is respectfully requested.

By a separate sheet attached hereto, the fee necessitated by the presentation of an additional independent claim has been calculated and a check in that amount is also enclosed.

In the Office Action, claims 1-4 were rejected under 35 USC §102(b) as being anticipated by the '120 Japanese patent publication to Hirofumi et al. In making this rejection, it was asserted that the cited Japanese patent publication teaches the entire reflow soldering apparatus as set forth in the noted claims. Reconsideration of this

rejection in view of the above claim amendments and the following comments is respectfully requested.

Before discussing the rejection in detail, a brief review of the presently claimed invention may be quite instructive. As defined in amended independent claim 1, the subject invention is directed to a reflow soldering apparatus comprising a conveyor to transport circuit boards mounted with electronic components into multiple chambers, and blowing means installed in the chambers. In the apparatus, the centers of the impellers in the adjacent blowing means are not on a single perpendicular plane along a transport line of the conveyor and arrayed offset to the left and right, and the adjacent blowing means are installed to overlap as seen horizontally from a direction perpendicular to the transport line of the conveyor.

The invention as defined by independent claim 1 is illustrated in the drawing attached hereto as Appendix A. The drawing is plan sectional view taken from Fig. 5 of the subject specification. As illustrated therein, centers A, B, C and D of the impellers are not on a single perpendicular plane along the transport line of the conveyor and are arrayed offset to the left and right. The adjacent blowing means are installed to overlap as seen horizontally from a direction perpendicular to the transport line of the conveyor.

As defined in amended independent claim 3, the subject invention is directed to a

reflow soldering apparatus comprising a conveyor to transport circuit boards mounted with electronic components into multiple chambers, and blowing means installed in the chambers. In the apparatus, the centers of the impellers in the adjacent blowing means are not on a single horizontal plane and arrayed offset up and down, and the adjacent blowing means are installed to overlap as seen vertically from a direction perpendicular to the transport line of the conveyor.

The invention as defined by independent claim 3 is illustrated in the drawings attached hereto as Appendix B. The drawings are a front sectional view taken from Fig. 8 of the subject specification and a plan sectional view taken from Fig. 11 of the subject specification. As illustrated therein, the centers A, B, C and D of the impellers are not on a single horizontal plane and arrayed offset up and down. The adjacent blowing means are installed to overlap as seen vertically from a direction perpendicular to the transport line of the conveyor. It is submitted that the reflow soldering apparatus as defined by independent claims 1 and 3 as amended are not taught or suggested by the '120 Japanese patent publication to Hirofumi et al.

For further clarity, the disclosure of the cited publication to Hirofumi et al is illustrated in the attached Appendix C which reproduces FIG. 1 of the publication. From the drawing, it is to be specifically noted that the centers of the fans 6, 8 and 11 are arrayed offset up and down. Furthermore, adjacent fans 6, 8 and 11 are not overlapped as seen vertically

from a direction perpendicular to the transport line of the conveyor 2.

From a comparison of the above and the attached Appendix A-C, it is submitted that the apparatus as presently claimed patentably distinguish over the Hirofumi et al publication in several important respects. More particularly, the Hirofumi et al publication discloses that the centers of the impellers in the adjacent fans 6, 8 and 11 are on a single perpendicular plane along a transport line of the conveyor 2. The Hirofumi et al publication does not teach the centers of the impellers in the adjacent fans not being on a single perpendicular plane along a transport line of the conveyor and with the centers arrayed offset to the left and right. The Hirofumi et al publication does not teach the adjacent fans being installed to overlap as seen horizontally from a direction perpendicular to the transport line of the conveyor. Accordingly, from the above, it is apparent that the Hirofumi et al publication does not teach or suggest the subject matter of amended claims 1 and 2.

The Hirofumi et al publication discloses that the centers of the impellers in the adjacent fans 6, 8 and 11 are arrayed offset up and down and adjacent fans 6, 8 and 11 are not overlapped as seen vertically from a direction perpendicular to the transport line of the conveyor 2. In addition, the Hirofumi et al publication does not teach the adjacent fans being overlapped as seen vertically from a direction perpendicular to the transport line of the conveyor 2. Accordingly, from the above, it is submitted that the Hirofumi et al publication does not teach or suggest the subject matter of amended claims 3 and 4.

Additionally, it is submitted that, for the same reasons as set forth above, the Hirofumi et al publication does not teach or suggest the subject matter of newly added claims 8-11.

For the reasons stated above, withdrawal of the rejection under 35 U.S.C. § 103(a) and allowance of claims 1 through 4 as amended over the cited Hirofumi et al patent publication are respectfully requested.

Claims 1-2 were rejected under 35 USC §102(b) as being anticipated by the Okuno et al patent. Reconsideration of this rejection in view of the above claim amendments and the following comments is respectfully requested.

It is submitted that the apparatus as defined by amended claim 1 patentably distinguishes over the disclosure of the Okuno et al patent. More particularly, the Okuno et al patent discloses that the centers of the impellers in the adjacent fans 17 are on a single perpendicular plane along a transport line of the conveyor 2. Among other things, the Okuno et al patent does not teach the centers of the impellers in the adjacent fans not being on a single perpendicular plane along a transport line of the conveyor and with the centers arrayed offset to the left and right. Furthermore, the Okuno et al patent does not teach the adjacent fans being installed to overlap as seen horizontally from a direction

perpendicular to the transport line of the conveyor. Accordingly, from the above, it is readily apparent that the Okuno et al patent does not teach or suggest the subject matter of amended claims 1 and 2. Additionally, it is submitted that, for the same reasons as set forth above, the Okuno et al patent does not teach or suggest the subject matter of newly added claims 8-11.

For the reasons stated above, withdrawal of the rejection under 35 U.S.C. § 103(a) and allowance of claims 1 and 2 as amended over the cited Okuno et al patent are respectfully requested.

Claims 5-7 were rejected under 35 USC § 102(b) as being anticipated by the '707 Japanese patent publication to Arata et al. Additionally, claims 5-7 were rejected under 35 USC § 102(b) as being anticipated by the '855 Japanese patent publication to Keizo. In making these rejections, it was asserted that the publications teach the entire apparatus as set forth in the noted claims. Reconsideration of this rejection in view of the above claim amendments is requested.

As noted above, claims 5-7 have been canceled herein. Accordingly, these rejections are now moot and, accordingly, withdrawal of the rejections under 35 U.S.C. § 103(a) is respectfully requested.

In view of the foregoing, it is submitted that the subject application is now in condition for allowance and early notice to that effect is earnestly solicited.

In the event this paper is not timely filed, the undersigned hereby petitions for an appropriate extension of time. The fee for this extension may be charged to Deposit Account No. 01-2340, along with any other additional fees which may be required with respect to this paper.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP

Donald W. Hanson
Attorney for Applicants
Reg. No. 27,133

Atty. Docket No. 031265
Suite 1000, 1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930
DWH/rab

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PATENT TRADEMARK OFFICE

Enclosures: Additional Claim Fee Sheet
Appendix A-C